

WHAT IS CLAIMED IS:

1. A master cylinder having a master piston slidably received in a cylinder bore, with a plurality of annular grooves formed around an inner wall of said cylinder bore, comprising:

an annular seal member having an annular groove of U-shaped cross section formed on one end face thereof, said seal member being placed in such a manner that the annular groove of U-shaped cross section is opened forward in said cylinder bore; and

a substantially annular seal retainer placed in front of said seal member for restricting at least axial movement of said seal member, said seal retainer including a substantially annular lifted wall portion formed to extend axially into the annular groove of said seal member, and a substantially annular step portion formed on an inner periphery of said lifted wall portion, for contacting an open end face of the annular groove of said seal member, said seal retainer being reduced in diameter by radial pressing force produced when said seal retainer is received in said cylinder bore, and restored when the pressing force is released,

wherein said annular grooves includes an annular transfer groove and an annular hold groove having a larger diameter than said annular transfer groove, formed in parallel with each other toward one open end of said cylinder bore, and wherein said seal member is placed in

said annular hold groove, and said seal retainer is received from the other open end of said cylinder bore to be placed in said annular transfer groove, with said seal retainer reduced in diameter, and wherein said seal retainer is transferred from said annular transfer groove to said annular hold groove, and said seal retainer is restored in such a state that said lifted wall portion extends into the annular groove of said seal member.

2. A master cylinder as set forth in claim 1, wherein said annular hold groove is formed into stepped grooves to provide a small diameter groove for holding said seal retainer, and a large diameter groove for holding said seal member, and wherein said small diameter groove is larger in diameter than said annular transfer groove.

3. A seal retainer for restricting at least axial movement of a seal member having an annular groove of U-shaped cross section formed on one end face thereof, for use in a master cylinder having a master piston slidably received in a cylinder bore, with a plurality of annular grooves formed around an inner wall of said cylinder bore, said annular grooves including an annular transfer groove and an annular hold groove having a larger diameter than said annular transfer groove, formed in parallel with each other toward one open end of said cylinder bore, comprising:

a substantially annular lifted wall portion formed to extend axially into the annular groove of U-shaped cross section of said seal member; and

a substantially annular step portion formed on an inner periphery of said lifted wall portion, for contacting an open end face of the annular groove of said seal member,

wherein said seal retainer is reduced in diameter by pressing force produced when said seal retainer is received in said cylinder bore, and said seal retainer is restored, when said seal retainer is received in said annular hold groove through said annular transfer groove.

4. A seal retainer as set forth in claim 3, wherein said seal retainer has a cut-out section on a part of the periphery of said seal retainer.

5. A seal retainer as set forth in claim 3, wherein said annular hold groove is formed into stepped grooves to provide a small diameter groove for holding said seal retainer, and a large diameter groove for holding said seal member, and wherein said small diameter groove is larger in diameter than said annular transfer groove.

6. A method for installing a seal retainer for restricting at least axial movement of a seal member having an annular groove of U-shaped cross section formed on one end face thereof, in a master cylinder having a master piston slidably received in a cylinder bore, with a plurality of annular grooves formed around an inner wall of said cylinder bore, said annular grooves including an annular transfer groove and an annular hold groove having a larger diameter than said annular transfer groove, formed in parallel with each other toward one open end of said

cylinder bore, comprising:

placing said seal member in said annular hold groove in such a manner that the annular groove of U-shaped cross section of said seal member is opened forward in said cylinder bore;

inserting said seal retainer from the other open end of said cylinder bore to be placed in said annular transfer groove, with said seal retainer reduced in diameter, said seal retainer including a substantially annular lifted wall portion formed to extend axially into the annular groove of said seal member, and a substantially annular step portion formed on an inner periphery of said lifted wall portion, for contacting an open end face of the annular groove of said seal member; and

transferring said seal retainer from said annular transfer groove to said annular hold groove, so that said seal retainer is restored in such a state that said lifted wall portion extends into the annular groove of U-shaped cross section of said seal member.

7. A method for installing a seal retainer in a master cylinder as set forth in claim 6, wherein said seal retainer has a cut-out section on a part of the periphery of said seal retainer.

8. A method for installing a seal retainer in a master cylinder as set forth in claim 6, wherein said annular hold groove is formed into stepped grooves to provide a small diameter groove for holding said seal retainer, and a large

diameter groove for holding said seal member, and wherein said small diameter groove is larger in diameter than said annular transfer groove, and wherein said seal retainer is transferred from said annular transfer groove to said annular hold groove, so that said seal retainer is restored in such a state that said lifted wall portion extends into the annular groove of said seal member.

9. A method for installing a seal retainer in a master cylinder as set forth in claim 6, wherein a first tool having a columnar portion and a second tool having a cylindrical portion for receiving therein said columnar portion to be slidable are provided for inserting said seal retainer and said first tool into said second tool to hold said seal retainer with the diameter thereof reduced, in said cylindrical portion, and then pushing said first tool rearward to transfer said seal retainer from said cylinder bore to said annular transfer groove, and further pushing said first tool and said second tool rearward to transfer said seal retainer from said annular transfer groove to said annular hold groove, to restore said seal retainer in such a state that said lifted wall portion extends into the annular groove of said seal member.

10. A method for installing a seal retainer in a master cylinder as set forth in claim 9, wherein said first tool includes a flange portion formed on an end of said columnar portion to provide a larger diameter than said columnar portion, and wherein said second tool includes a

cylindrical portion whose inner diameter is substantially equal to the outer diameter of said columnar portion, and which receives said columnar portion to be slidable, and a flange portion which extends from an end of said cylindrical portion to enlarge the diameter thereof, and wherein said method is achieved by inserting said seal retainer and said first tool into said second tool to hold said seal retainer with the diameter thereof reduced, in said cylindrical portion, and then pushing said first tool rearward to make said flange portion of said first tool abut on said flange portion of said second tool, and pushing further said first tool to transfer said seal retainer from said cylinder bore to said annular transfer groove, and further pushing rearward said first tool and said second tool in a body to make said cylindrical portion of said second tool abut on said seal retainer, and then pushing said first tool and second tool rearward, to transfer said seal retainer from said annular transfer groove to said annular hold groove.

11. A method for installing a seal retainer in a master cylinder as set forth in claim 9, wherein said first tool includes a flange portion formed on an end of said columnar portion to provide a larger diameter than said columnar portion, and wherein said second tool includes a cylindrical portion whose inner diameter is substantially equal to the outer diameter of said columnar portion, and which receives said columnar portion to be slidable, and a flange portion which extends from an end of said cylindrical

portion to enlarge the diameter thereof, and wherein said method is achieved by inserting said seal retainer and said first tool into said second tool to hold said seal retainer with the diameter thereof reduced, in said cylindrical portion, and then pushing said first tool to transfer said seal retainer from said cylinder bore to said annular transfer groove, and then pushing said first tool rearward to make said flange portion of said first tool abut on said flange portion of said second tool, and further pushing rearward said first tool and said second tool in a body to make said cylindrical portion of said second tool abut on said seal retainer, and then pushing said first tool and second tool rearward, to transfer said seal retainer from said annular transfer groove to said annular hold groove.